

PREVASCULARIZED POLYMERIC IMPLANTS FOR ORGAN TRANSPLANTATION

Abstract of the Invention

A method is disclosed whereby cells having a desired function are seeded on and into biocompatible, biodegradable or non-degradable polymer scaffolding, previously implanted in a patient and infiltrated with blood vessels and connective tissue, to produce a functional organ equivalent. The resulting organoid is a chimera formed of parenchymal elements of the donated tissue and vascular and matrix elements of the host. The matrix should be a non-toxic, injectable porous template for vascular ingrowth. The pore size, usually between approximately 100 and 300 microns, should allow vascular and connective tissue ingrowth throughout approximately 10 to 90% of the matrix, and the injection of cells such as hepatocytes without damage to the cells or patient. The introduced cells attach to the connective tissue and are fed by the blood vessels. Immediately prior to polymer implantation portacaval shunts can be created to provide trophic stimulatory factors to the implants to enhance replication and function.